

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

Title V Draft Permit No. V-01-006, Revision 1

TRACE DIE CAST, INCORPORATED

BOWLING GREEN, KENTUCKY

March 21, 2005

SIEW NONG LIM, REVIEWER

AARON NEWTON, REVIEWER

Plant I.D. # 21-227-00085

Application Log # 56331

SOURCE DESCRIPTION:

Trace Die Cast, Inc. melts aluminum ingots before casting them into aluminum parts. Clean aluminum ingots are preheated in a 0.35-mmbtu/hour, natural gas-fired pre-heater before charging them into 6 reverberatory melt furnaces, emission points 101(CF1)-106(CF6). The furnaces are natural gas-fired and have a total melting rate of 13 tons/hour of aluminum ingots. Both emission points 101(CF1) and 102(CF2) have a maximum continuous rating of 8.0 mmbtu/hour each while emission point 103(CF3) is 6.0 mmbtu/hour and 104(CF4), 105(CF5) and 106(CF6) are 10.0 mmbtu/hour. The molten aluminum is fluxed with chloride and fluoride based flux salts. Aluminum dross formed is sent off site for metal recovery. The melted and fluxed aluminum is then transferred to 38 holding furnaces, emission points 201(HF1)-216(HF16), 221(HF21)-225(HF25), 230(HF30)-236(HF36), 241(HF41)-245(HF45), and 251(HF51)-255(HF55) where it is fluxed again using chloride and fluoride based flux salts. The holding furnaces have a maximum holding rate of about 17 tons/hour. Each holding furnace, except for 230(HF30)-233(HF33), has a maximum continuous rating of 0.25 mmbtu/hour. Emission points 230(HF30)-233(HF33) each has a rating of 0.33 mmbtu/hour. Subsequently, the molten aluminum from the holding furnaces is cast into aluminum parts in 38 corresponding die cast machines, emission points 301(DCM1)-316(DCM16), 321(DCM21)-325(DCM25), 330(DCM30)-336(DCM36), 241(DCM41)-245(DCM45), and 251(DCM51)-255(DCM55). Five different casting lubricants, grease, and oil are used in the die cast machines along with water. The aluminum castings are then trimmed by a hydraulic press before they are polished by steel shots in 3 shot blast machines, emission points 501(SB1)-504(SB4), which have a total rate of 6.75 tons/hour of aluminum castings. The effluent water from the die cast machines are evaporated in 6 evaporators, emission points 401(Evap1)-406(Evap6), to separate the oils from the water. The trimmed and shot blasted aluminum scrap is collected and sent back to the melt furnaces to be re-melted. Spent steel shots are collected and disposed of in landfill

COMMENTS:

A Title V application for Trace Die Cast, Inc. was received on January 11, 2001. On February 22 and March 6, 2001, the Division received additional information for construction of the following affected facilities: 4 holding furnaces (230(HF30)-233(HF33)), 4 die cast machines (330(DCM30)-333(DCM33)), and an evaporator (405(Evap5)). This additional information was initially logged as

53603, but was later combined with the Title V application.

The Title V potential to emit (PTE) after the proposed construction is 68.19 tons per year (TPY) of PM, 66.48 TPY of PM₁₀, 155.88 TPY of VOC, and 5.177 TPY of diethylene glycol. The construction of affected facilities increases the PTEs by 27.39 TPY of PM, 26.73 TPY of PM₁₀, 62.63 TPY of VOC, and 2.295 TPY of diethylene glycol. Trace Die Cast, Inc. is not a major source before this proposed construction.

There are only 3 control equipment for the whole facility: 3 baghouses, which control particulate emissions from the SB1-3 shot blast machines, and a Ventury Scrubber for emissions from SB4 shot blaster. Emission factors are based on AP-42, the emissions inventory system, and source-provided material safety data sheets and onsite testing. A complete list of emission factors and their source is provided with the pollutants-of-concern calculations.

Regulations applicable to the melt furnaces are 401 KAR 59:010 – New process operations (applicable to particulate and visible emissions) and 401 KAR 63:060 – List of hazardous air pollutants, petition process, lesser quantity designations, and source categories (applicable to emissions of HAPs, specifically, chromium, lead, manganese, nickel, HCl, and HF). The same regulations apply to the shot blast machines, which have particulate, visible, and manganese emissions.

For the holding furnaces and die cast machines, emissions are emitted as fugitives. Applicable regulation is 401 KAR 63:060, which is applicable to emissions of HAPs, specifically, chromium, lead, manganese, nickel, HCl, and HF from the holding furnaces, and diethylene glycol from the die cast machines.

The 6 evaporators are subject to 401 KAR 59:095 – New oil-effluent water separator (applicable to hydrocarbon emissions) and 401 KAR 63:060 (applicable to emissions of diethylene glycol).

Plant-wide gaseous fluoride emission was modeled using ISCST3 and the resulting (second highest) 24-hour concentration of 0.00121 $\mu\text{grams}/\text{m}^3$ is very much lower than the standard set in 401 KAR 53:010 – Ambient air quality standards.

Since Trace Die Cast, Inc. is a manufacturer of aluminum die castings, the Secondary Aluminum MACT does not apply, pursuant to 40 CFR 63 Subpart RRR §63.1500(d).

EMISSION AND OPERATING CAPS DESCRIPTION:

The following is a summary of emission caps for emission points subject to 401 KAR 59:010:

Emission Points	Pollutants	Emission Caps (Per Emission Point)
101(CF1)	Particulate Opacity	5.52 lbs/hour, 24.17 TPY
102(CF2)		20%
103(CF3)		4.62 lbs/hour, 20.22 TPY
104(CF4)		20%
105(CF5)		6.34 lbs/hour, 27.75 TPY
106(CF6)		20%
501(SB1)		2.34 lbs/hour, 10.25 TPY
502(SB2)		20%
503(SB3)		20%
504(SB4)		13.39 lbs/hr, 58.67 TPY
		20%

The operating limitation for the melt furnaces is that only clean aluminum ingots shall be melted. The evaporators are subject to the operating standards given in 401 KAR 59:095.

PERIODIC MONITORING:

Trace Die Cast, Inc. is required by permit to monitor the types of all raw materials processed, the monthly amounts of such materials processed, and the monthly total hours of operation. Semi-annual Method 9 opacity test is required in addition to the weekly qualitative visual observation of opacity. The permit also requires the monitoring of HAPs emissions to insure the new construction does not exceed the 10 tons per year of a HAP limit required for compliance.

OPERATIONAL FLEXIBILITY:

None

REVISION 1:

In February of 2004 Trace Die Cast applied to construct additional equipment and modify existing equipment at the facility. No provisions of the permit are changed from the initial issuance. The following is a description of changes and additions.

Emission point 107 (CMF07) is a new central melt furnace rated at 10 mmbtu per hour and capable of melting 3 tons per hour of aluminum. Points 202-208 (HF2-HF8) and 212-215 (HF12-HF15) are now rated for 0.33 mmbtu/hr and capable of holding 0.625 tons per hour of aluminum. Points 261-265 (HF61-HF65) and points 271-275 (HF71-HF75) are new holding furnaces each rated for 0.33 mmbtu per hour and capable of holding 1.5 tons per hour of aluminum. Points 302-308 (DCM2-

DCM8) and points 312-315 (DMC12-DCM15) are now each rated for 0.625 tons per hour. The new die cast machines, 361-365 (DCM61-DCM65 and 371-375 (DCM71-DCM75) are each rated for 1.5 tons per hour of aluminum. Two new Process Wastewater Evaporators have been added, points 407 (Evap7) and 408 (Evap8). Each has a heat input rating of 1.5 mmbtu per hour and an process rate of 130 gallons per hour. Finally a new shot blast machine has been added, point 505 (SBM5) and uses shot at the rate of 0.036 tons per hour.

Further expansion at the plant will likely require a PSD review but regulations do not require one at this time.

Administrative Corrections:

There were two conditions missed in the initial Title V permit issuance.

1. The monitoring of flux usage rates at Holding Furnaces: The permittee currently monitors the flux usage rates at these units and reports them to the field office. This condition was listed at melt furnaces but was not listed at the holding furnaces. This condition is added to the holding furnaces with this revision.
2. The source wide limit of HAPS (9 tons of single HAP and 22.5 of combination of HAPS) was listed in the Statement of Basis but was not put in the permit. This condition is added in the revision.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.